



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
02.01.2003 Bulletin 2003/01

(51) Int Cl.7: **B65B 35/50**, B65B 35/44,
B65G 57/11, B65G 47/64

(21) Application number: **02007964.6**

(22) Date of filing: **10.04.2002**

(84) Designated Contracting States:
**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE TR**
Designated Extension States:
AL LT LV MK RO SI

(72) Inventors:
• **Cinotti, Andrea**
40141 Bologna (IT)
• **Cassoli, Mirko**
40037 Sasso Marconi (Bologna) (IT)

(30) Priority: **19.06.2001 IT TO010592**

(74) Representative: **Marchitelli, Mauro**
c/o Buzzi, Notaro & Antonielli d'Oulx Srl
Via Maria Vittoria 18
10123 Torino (IT)

(71) Applicant: **Casmatic S.p.A.**
40033 Casalecchio di Reno, Bologna (IT)

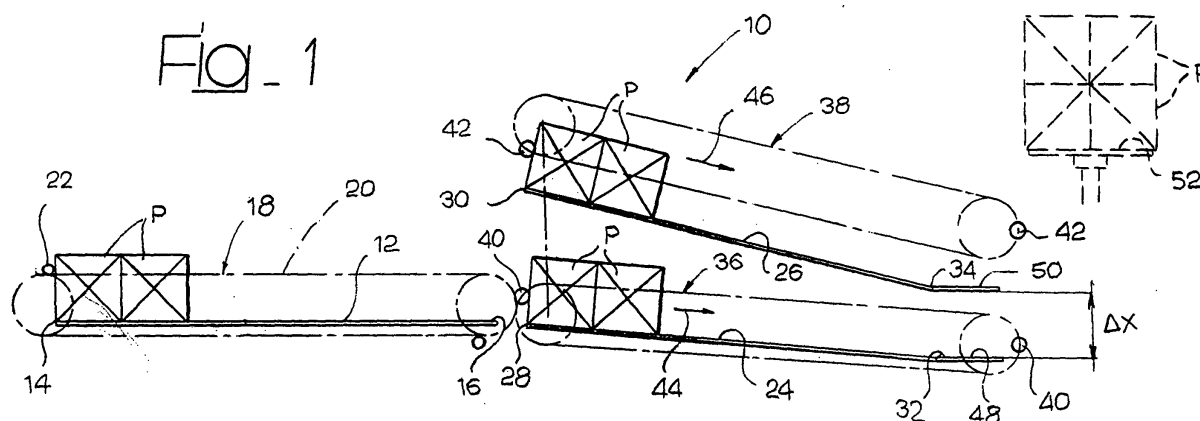
(54) **Equipment for superimposing two layers of products to be packaged**

(57) Equipment for superimposing layers of products to be packaged (P), comprising:

- a feed surface (12) associated to a first product-feed device (18); and
- a pair of preparation surfaces (24, 26) set on top of one another and designed to receive each a respective layer of products to be packaged (P), the preparation surfaces (24, 26) being associated each to

a respective feed device (36, 38), the said feed devices (36, 38) being designed to cause synchronized advance of corresponding layers of products (P) along the preparation surfaces (24, 26).

Both of the preparation surfaces (24, 26) are mobile so as to bring alternately the respective product-intake end (28, 30) into a position corresponding to the product-output end (16) of the feed surface (12).



Description

[0001] The present invention relates to a piece of equipment for superimposing two layers of products to be packaged. The invention has been developed in particular with a view to its application to automatic machines for packaging rolls of paper, such as rolls of toilet paper or rolls of kitchen wipes, which are arranged for the formation of packs consisting of two layers of products. The Italian patent No. 1 225 033 describes a piece of equipment designed to form two layers set on top of one another of cylindrical products, such as rolls of paper. The known equipment described in the aforesaid Italian patent application comprises a stationary feed surface for feeding the products, which is associated to a first device for advance of the products. Set downstream of the product-feed surface is an oscillating surface articulated about an axis transverse to the direction of advance of the products. The intake end of the oscillating surface receives the products from the output end of the stationary feed surface, whilst the output end of the oscillating surface moves cyclically between two operating positions. Provided downstream of the oscillating surface are two preparation surfaces set one on top of the other, which receive each a respective layer of products coming from the oscillating surface. The preparation surfaces are associated each to a respective product-feed device, the said devices being synchronized with one another and being set in such a way that the layers of products that advance on the preparation surfaces are perfectly set on top of one another at the output ends of the preparation surfaces.

[0002] Starting from the above example of prior art, the present invention has the purpose of providing a piece of equipment for superimposing two layers of products to be packaged that is simpler, more economical and is made up of a smaller number of components than the equipment according to the prior art described previously.

[0003] According to the present invention, the above purpose is achieved by a piece of equipment having the characteristics that form the subject of the main claims.

[0004] The characteristics and advantages of the present invention will emerge clearly from the ensuing description, provided purely by way of non-limiting example, with reference to the attached drawings, in which:

- Figure 1 is a schematic side elevation of a piece of equipment according to the present invention;
- Figures 2 and 3 are schematic side views illustrating different operating positions of the equipment of Figure 1; and
- Figure 4 is a schematic plan view of the equipment of Figure 1.

[0005] With reference to the drawings, number 10 designates a piece of equipment for superimposing lay-

ers of products P, consisting, for example, of rolls of paper, which advance in a direction parallel to their own longitudinal axis. The equipment 10 comprises a stationary feed surface 12 having an intake end 14 and an output end 16. The feed surface 12 is associated to a feed device 18, which may be of any type and is designed to cause advance of the products P from the intake end 14 towards the output end 16. Preferably, the product-feed device 18 comprises a pair of motor-driven chains 20 (Figure 4) which are set laterally with respect to the feed surface 12 and carry a plurality of transverse rods 22 that push the products P along the feed surface 12.

[0006] The equipment 10 comprises two preparation surfaces 24, 26 set on top of one another and each having a respective intake end 28, 30 and a respective output end 32, 34. The preparation surfaces 24, 26 are associated each to a respective product-feed device 36, 38. The product-feed devices 36, 38 may be built in a way similar to that of the feed device 18 associated to the feed surface 12. The reference numbers 40, 42 designate drawing rods which can move in the direction indicated by the arrows 44, 46 to cause the products to advance from the intake ends to the output ends of the preparation surfaces 24, 26. The preparation surfaces 24, 26 are mobile so as to bring alternately their respective intake ends 28, 30 up to the output end 16 of the feed surface 12. The device that controls movement of the preparation surfaces 24, 26 may be of any known type. In the embodiment illustrated in the figures, the preparation surfaces 24, 26 can oscillate about respective axes set at the output ends 32, 34 of the preparation surfaces 24, 26. In an alternative embodiment, which is not illustrated in the drawings, the preparation surfaces 24, 26, instead of being hinged about an axis, could be translated in a direction orthogonal to the direction of movement of the products.

[0007] In the embodiment illustrated by way of example in the figures, two short stationary surfaces 48, 50 are set in the proximity of the output ends 32, 34 of the preparation surfaces 24, 26. Set immediately downstream of the stationary surfaces 48, 50 is a lifting plate 52 which can move vertically and is designed to receive two layers of products set on top of one another that are to be packaged in a plastic film, according to modalities in themselves known which do not fall within the scope of the present invention.

[0008] During operation, the preparation surfaces 24, 26 are cyclically displaced between the two operating positions, illustrated in Figures 2 and 3, in a way synchronized with the movement of the feed devices 18, 36 and 38.

[0009] The products P coming from the feed surface 12 are alternately loaded onto the bottom preparation surface 24 and onto the top preparation surface 26. The two layers of products then advance synchronously along the two surfaces 24, 26 and are laid on top of one another on the lifting plate 52, as illustrated in Figure 3.

[0010] As compared to the machine according to the prior art described in the Italian patent No. 1 225 033, the solution according to the present invention makes it possible to reduce the length of the equipment for forming the layers. In fact, all other conditions being equal, the overall length of the machine may be reduced by an amount corresponding to the length of the oscillating surface that is present in the solution according to the prior art. 5

[0011] Preferably, the distance Δx between the output ends of the preparation surfaces 24, 26 may be adjusted according to the diameters of the rolls to be packaged. 10

Claims

15

1. Equipment for superimposing layers of products to be packaged (P), comprising:

- a feed surface (12) associated to a first product-feed device (18); and 20
- a pair of preparation surfaces (24, 26) set on top of one another and designed to receive each a respective layer of products to be packaged (P), the preparation surfaces (24, 26) being associated each to a respective feed device (36, 38), the said feed devices (36, 38) being designed to cause synchronized advance of corresponding layers of products (P) along the preparation surfaces (24, 26), 25 30

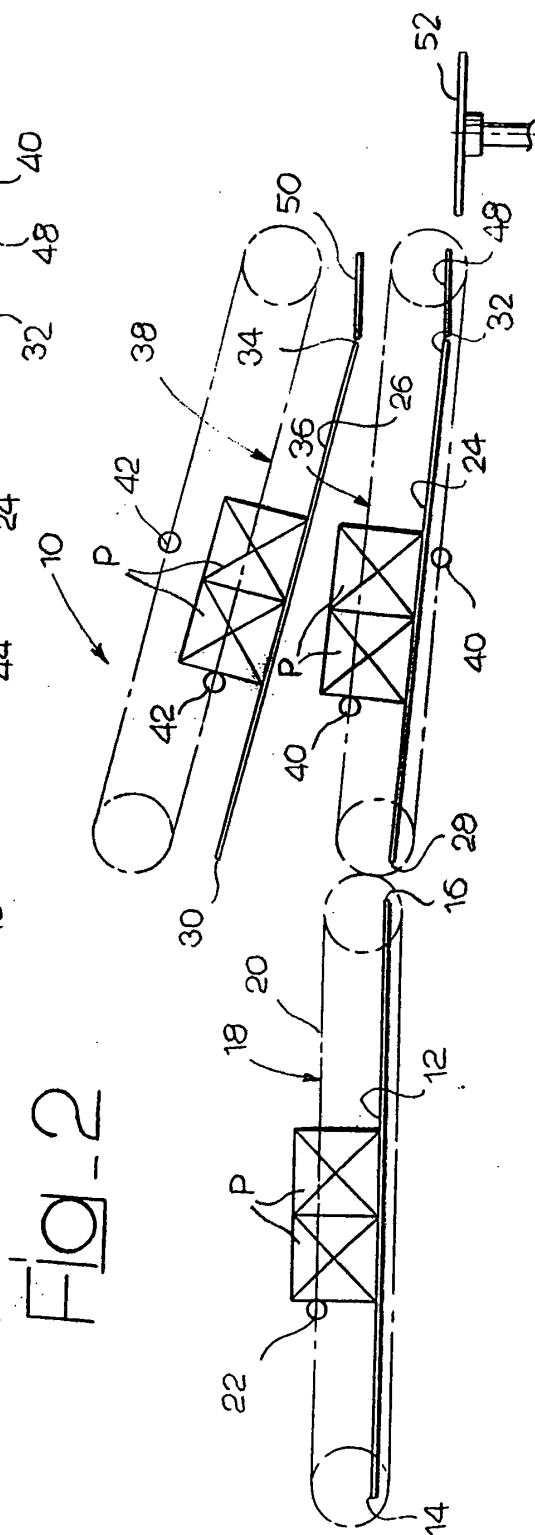
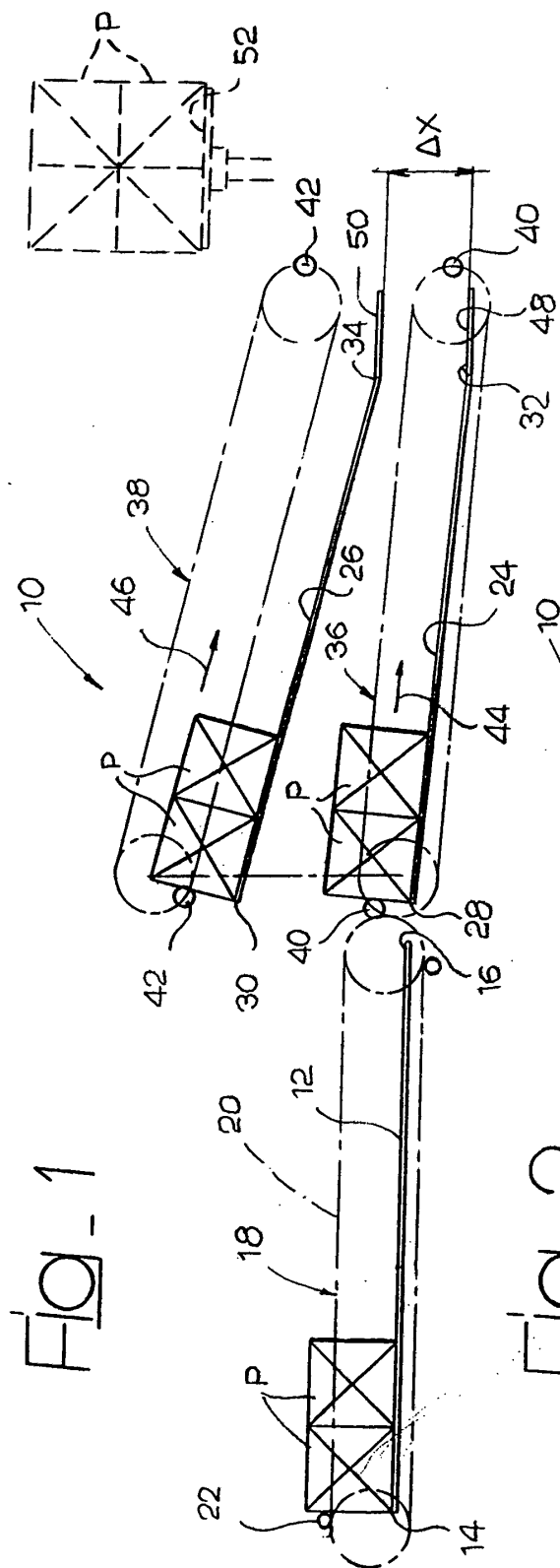
characterized in that both of the aforesaid preparation surfaces (24, 26) are mobile so as to bring alternately the respective product-intake end (28, 30) into a position corresponding to the product-output end (16) of the feed surface (12). 35

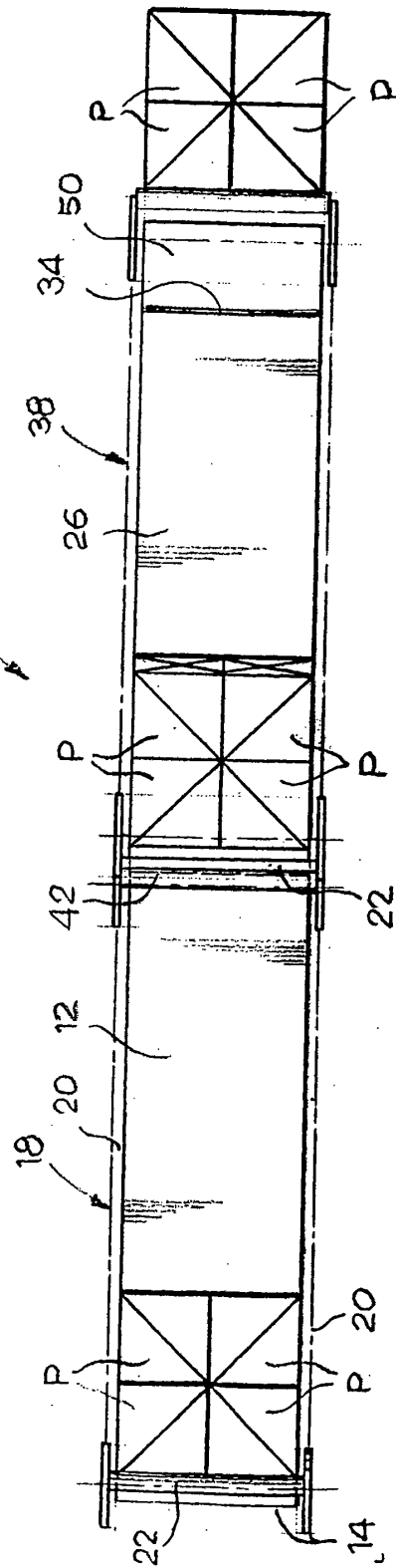
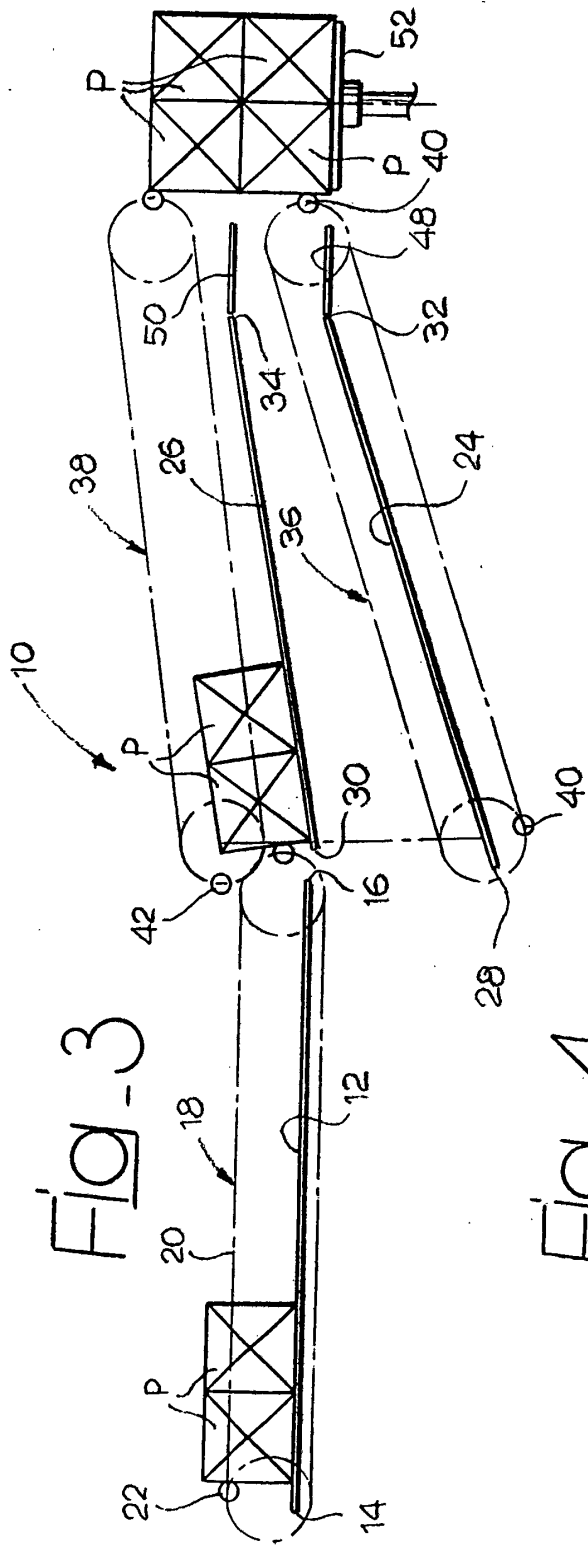
2. The equipment according to Claim 1, **characterized in that** the aforesaid preparation surfaces (24, 26) are mounted in such a way that they oscillate about respective axes set at the respective output ends (32, 34). 40

3. The equipment according to Claim 1, **characterized in that** the distance (Δx) between the output ends (32, 34) of the preparation surfaces (24, 26) is adjustable. 45

4. The equipment according to Claim 1, **characterized in that** the preparation surfaces (24, 26) are translatable in a direction orthogonal to the direction of feed of the products. 50

55







European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 02 00 7964

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
Y	US 5 430 994 A (FÖCKE HEINZ ET AL) 11 July 1995 (1995-07-11) * column 2, line 28 - column 4, line 51; figures *	1, 3, 4	B65B35/50 B65B35/44 B65G57/11 B65G47/64
D, Y	US 5 092 448 A (CINOTTI ANDREA) 3 March 1992 (1992-03-03) * column 2, line 18 - column 4, line 2; figures *	1, 3, 4	
Y	US 3 080 043 A (JOHANSEN JOHN V ET AL) 5 March 1963 (1963-03-05) * column 2, line 15 - column 7, line 29; figures *	3	
A	US 4 284 187 A (KRAMER ULRICH ET AL) 18 August 1981 (1981-08-18)		
A	DE 20 25 185 A (JAATINEN P) 4 November 1971 (1971-11-04)		
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			B65B B65G
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
THE HAGUE		18 September 2002	Jagusiak, A
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

EPC FORM 1503 03 92 (PC4001)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 02 00 7964

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

18-09-2002

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
US 5430994	A	11-07-1995	DE	4215642 A1	18-11-1993
			EP	0569786 A1	18-11-1993
			JP	6122420 A	06-05-1994

US 5092448	A	03-03-1992	IT	1225033 B	02-11-1990

US 3080043	A	05-03-1963	NONE		

US 4284187	A	18-08-1981	CH	621305 A5	30-01-1981
			DE	2964251 D1	20-01-1983
			EP	0005740 A1	12-12-1979
			SU	856373 A3	15-08-1981

DE 2025185	A	04-11-1971	FI	43841 B	01-03-1971
			DE	2025185 A1	04-11-1971
